FACTORS AFFECTING PRENATAL ENVIRONMENTAL MANCOZEB EXPOSURE AMONG INFANTS IN THE INFANTS' ENVIRONMENTAL HEALTH (ISA) STUDY

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Introduction: At banana plantations, weekly aerial applications of mancozeb, a ethylene bisdithiocarbamate (EBDC) fungicide, are performed to protect bananas from Sigatoka disease. This study aims to identify environmental factors that determine prenatal mancozeb exposure in infants living nearby banana plantations.
Methods: The study population consists of 450 mother-child pairs from the Infants' Environmental Health Study (ISA, for its acronym in Spanish), living in 40 villages with intensive large-scale banana farming from the Matina County, Limón. Using GIS, maps were elaborated for the communities, including house-locations of the study participants. Distances from banana plantations to houses were calculated, and meteorological stations were used to obtain data on wind direction and other climatologic factors. In addition, information on socio-economical and occupational factors was obtained by administering structured interviews during the first, second and third trimesters of pregnancy. During pregnancy, repeated urine samples were obtained for 450 women and subsequently ethylenethiourea (ETU) levels were determined. ETU is a specific metabolite of EDBC fungicides.
Results: Maps showed that 10 out 40 villages are immersed in banana plantations, and located less than 100 meters from the fields. We observed frequent aerial spraying above public roads, playing areas and houses: a disobedience of the current legislation of a minimum distance of 30 meters when a natural barrier is present, or 100 meters in case a natural barrier is absent. We will present the results of environmental factors affecting prenatal mancozeb exposure in approximately 250 infants, using ETU as a biomarker for exposure.
Conclusions: GIS form a powerful tool to unravel pesticide exposure determinants. To achieve compliance of current legislation of pesticide applications with light aircrafts or helicopters, governmental supervision mechanisms of aerial pesticide applications should be revised.